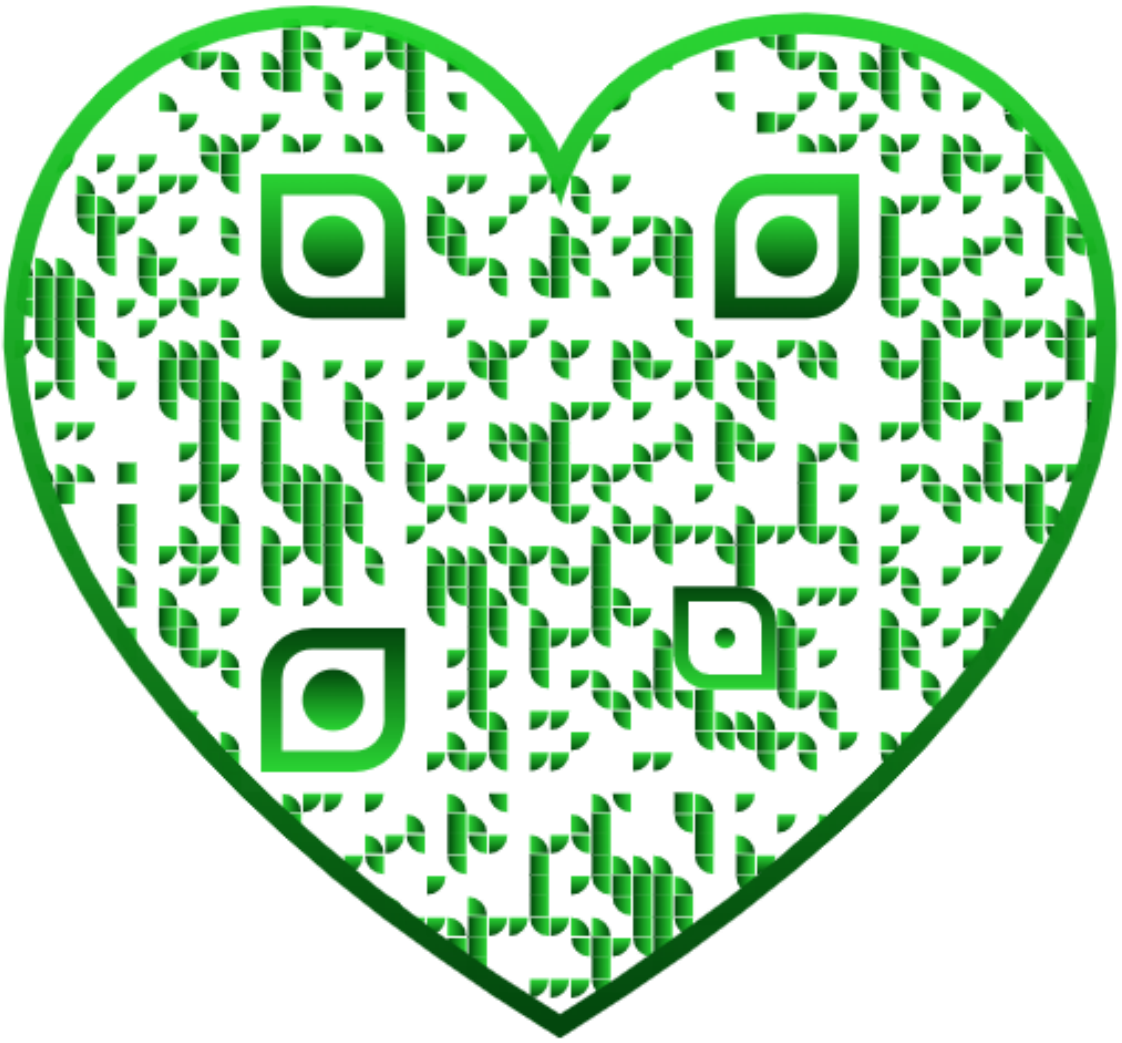
❖ EXAMINATION OF EYE DONE FROM OUT TO IN BY ARRANGE

❖ VISUAL ACUITY Don't test v/a in the exam, but let the examiner know that you know.	
1- EXTERNAL APPEARANCE	**LOOK** to patient from **FAR FOR** Head position (Head tilting, head turn, chin elevation) Ptosis, Lid retraction, Squint, Proptosis, Enophthalmos, Xanthalasma, etc... (ANY OBVIOUS THING)
2- EYE LID	❖ **INSPECTION:-** **LOOK FOR:** -, , Entropion, Ectropion, Chalazion, stye, Lid edema ❖ **PALPATION:-** on upper & lower lid to detect any swelling ((e.g. Chalazion)).
3- EYE LASHES	**LOOK FOR** Madarosis, Poliosis, Trichiasis
4- LACRIMAL APPARATUS	❖ **INSPECTION: -** **LOOK FOR** Swelling or redness in lacrimal area (Acute dacryocystitis)
5- CONJUNCTIVA	**LOOK** for Pterygium, Pinqueculum, Bleb, Symblepharon, Subconjunctival hemorrhage, Chemosis, Red eye
6- SCLERA	**LOOK** for Blue sclera
7- CORNEA	**LOOK FOR** Corneal opacity Types (Nebula, Macula, Leucoma) Position (central at pupil, Paracentral at pupil margin, peripheral near to limbus) Corneal edema, Pannus, Arcus Senilis, Keratoplasty, Keratoconus
8- A/C	**LOOK FOR** Depth (Normal, Deep, Shallow) Abnormal content = Hyphema, Hypopyon, IOL A/C, Ahmed valve
9- IRIS	**LOOK FOR** Color changes (Heterochromia), Procedure (Iridotomy, Iridoectomy), Iridodenesis, Rubeosis iridis,
10- PUPIL	CRRR (Central, Round, Regular, React) Light reflex (Direct, Indirect) Size (Miosis, Mydriasis)
11- LENS	Position (normal, partial or complete dislocation) Opacity (Mature, Immature cataract) Pseudophakia Aphakia

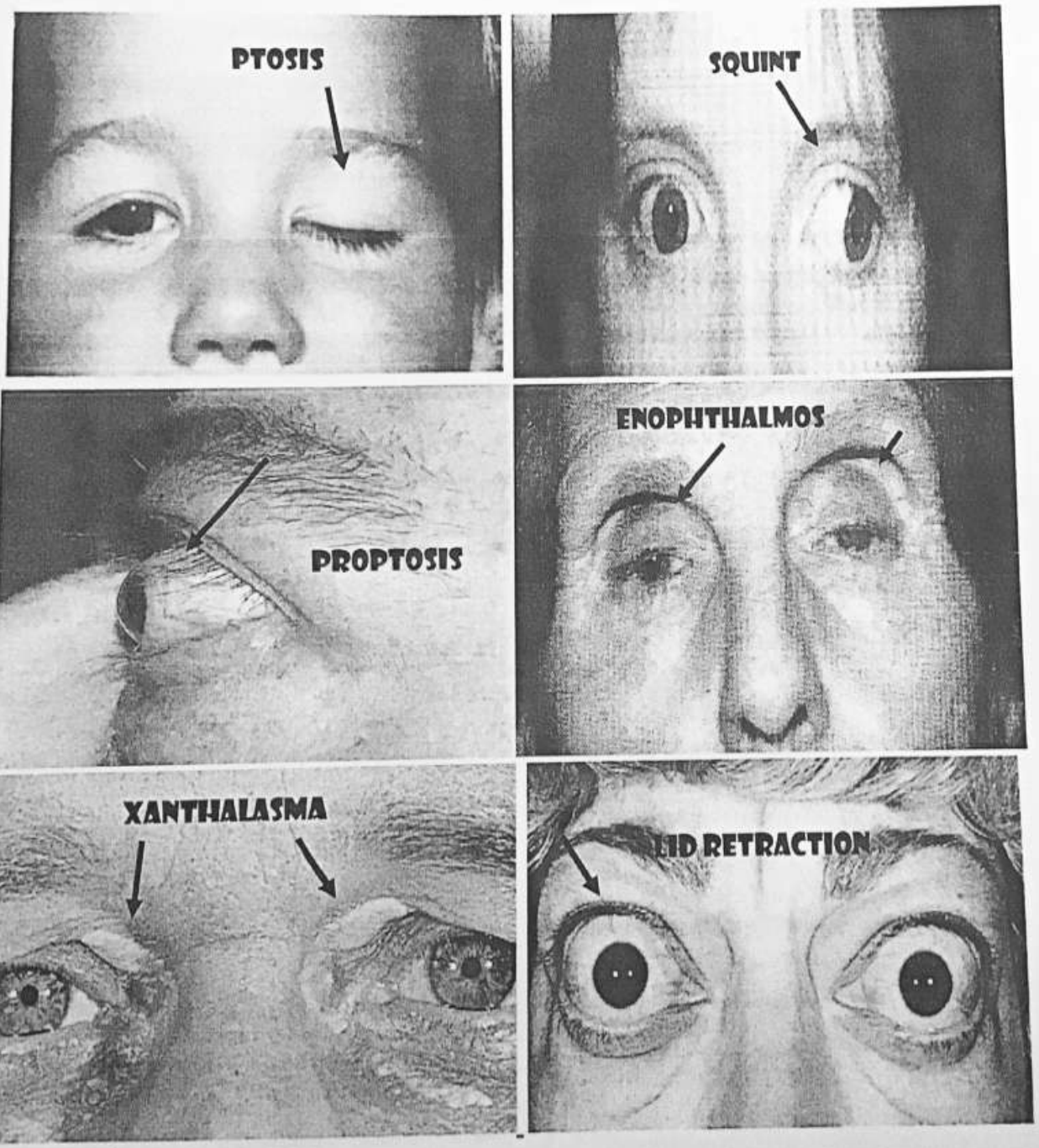


1- EXTERNAL APPEARANCE

LOOK to patient from **FAR FOR**

Head position (Head tilting, Head turn, chin elevation)

Ptosis, Squint, Proptosis, Enophthalmos, Xanthelasma, Epicanthus, Dermatochalasis etc... (ANY OBVIOUS THING)



Proptosis

❖ **Causes**

1- Congenital

1- Dermoid cyst

2- Menningo-encephalocele

2- Acquired

A- Endocrine

Grave's disease **(Most Common Cause)**

B- Traumatic

1- Retro bulbar hematoma

2- Surgical emphysema

3- Arterio-venous shunt e.g. carotid-cavernous fistula

C-Inflammatory

1- **Acute:** - Acute dacryoadenitis, Orbital cellulitis, Panophthalmitis, Cavernous sinus thrombosis, Orbital abscess

2- **Chronic:** - Orbital pseudo-tumor, Tuberculoma (TB), Gumma ($), Sarcoidosis

D- Neoplastic

❖ **Primary**

1- Lacrimal gland tumor

2- Optic nerve tumor

3- Fibroma, Haemangioma, Lymphoma, Sarcoma e.g. (Rhabdomyosarcoma, lymphosarcoma)

4- Extension from intra-ocular tumor e.g. Retinoblastoma, Malignant Melanoma of choroid

❖ **Secondary**

1- Breast Carcinoma in Female

2- Bronchogenic Carcinoma , Cancer of prostate in Male

E- Vascular

1- Orbital varices

2- Orbital aneurysm

3- Orbital hemorrhage

Lid retraction

It's when upper eyelid at level or above superior limbus..

❖ **Causes**

1- Thyroid eye disease.

2- Surgical overcorrection of ptosis.

3- Scarring of upper lid skin.

4- Marcus gunn jaw-winking syndrome

Enophthalmos

Abnormal retro-displacement of the eyeball

❖ **Causes**

1- Traumatic >>> Blow out fracture

2- Senile Enophthalmos

3- Post-operative>>> when remove large orbital mass

4- Post inflammatory >>> Orbital cellulitis

Xanthelasma

Xanthelasma is common, ***bilateral*** condition which is usually found in ***middle-aged & elderly*** patient or those with ***hyperlipidemia***

❖ **Signs**

Yellowish, subcutaneous plaques consisting of ***cholesterol & lipid*** which are usually located at the ***medial aspects of eyelid***.

❖ **Treatment**

NO treatment EXCEPT for cosmetic reasons is either by excision or destruction with argon laser

Ptosis

It's Drooping of upper lid.

**Types

1- Congenital

2- Acquired

A- Neurogenic

1- 3rd cranial nerve palsy

2- Horner's syndrome

B- Myogenic

1- Myotonic dystrophy.

2- Myasthenia gravis.

C- Aponeurotic

Due to defect of aponeurosis of Levator Ms

D-Mechanical

Due to multiple chalazion etc....

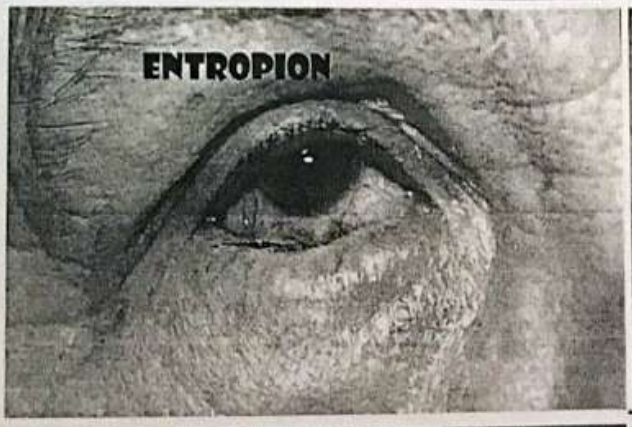
**Treatment

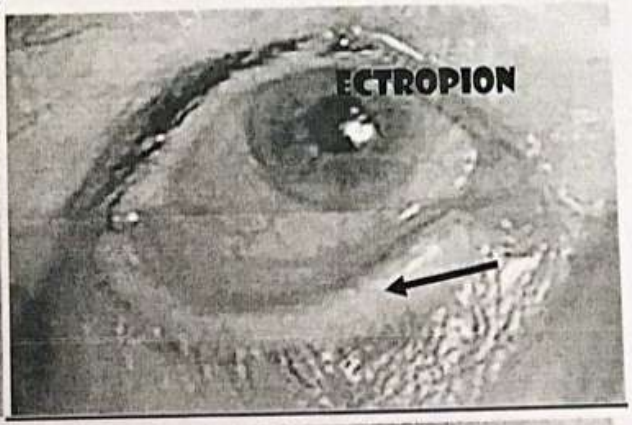
Surgical

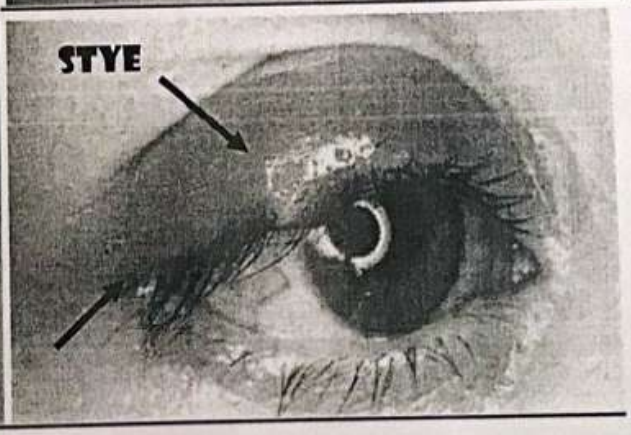
2- EYE LID

❖ **INSPECTION:-**

LOOK FOR: - Ptosis, Lid retraction, Entropion, Ectropion, Chalazion, any swelling or redness (Inflammation e.g. stye), Lid coloboma, Lid swelling (lid edema) and Lid ulcer (Lid cancer).







Entropion

It's rolling in of lid margin

❖ **Types**

1- **Congenital**

Due to Microphthalmos, Anophthalmos

2- **Acquired**

A- Cicatricial

Due to fibrosis of Palpebral conjunctiva as in Trachoma, burn, etc...

B- Spastic

C- Senile (MOST COMMON CAUSE)

Due to Enophthalmos

❖ **Symptoms**

Foreign body sensation, Photophobia, Pain, Lacrimation, Itching

❖ **Complication**

Keratitis, Superficial vascularisation, chronic conjunctivitis

❖ **Treatment**

Surgical

Chalazion

Chronic lipogranulomatous Inflammation of Meibomian gland

❖ **Symptoms**

Slowly progressive Painless swelling **Away** from lid margin

❖ **Signs**

No Tenderness

Lid edema

❖ **Causes**

1- Inflammatory

Orbital cellulitis, stye, acute dacryocystitis Acute conjunctivitis

2- Non inflammatory

Heart & Renal failure, Allergic edema

Ectropion

It's rolling out of lid margin

❖ **Types**

1- Congenital.

2- Acquired.

A- Senile (MOST COMMON CAUSE)

B- Spastic

C- Cicatricial

Due to scaring of lid skin as in burn

D- Mechanical

Due to increase of weight of lower lid by large or multiple chalazion, Tumor

E –Paralytic

Facial nerve palsy

❖ **Symptoms**

Epiphora, lagophthalmos >>> conjunctivitis, exposure keratitis

❖ **Complication**

1- Epiphora

2- Lagophthalmos >>>Dry eye, chronic conjunctivitis, exposure keratitis

❖ **Treatment**

Surgical

Stye

Acute suppurative inflammation of Zeis gland

❖ **Symptoms**

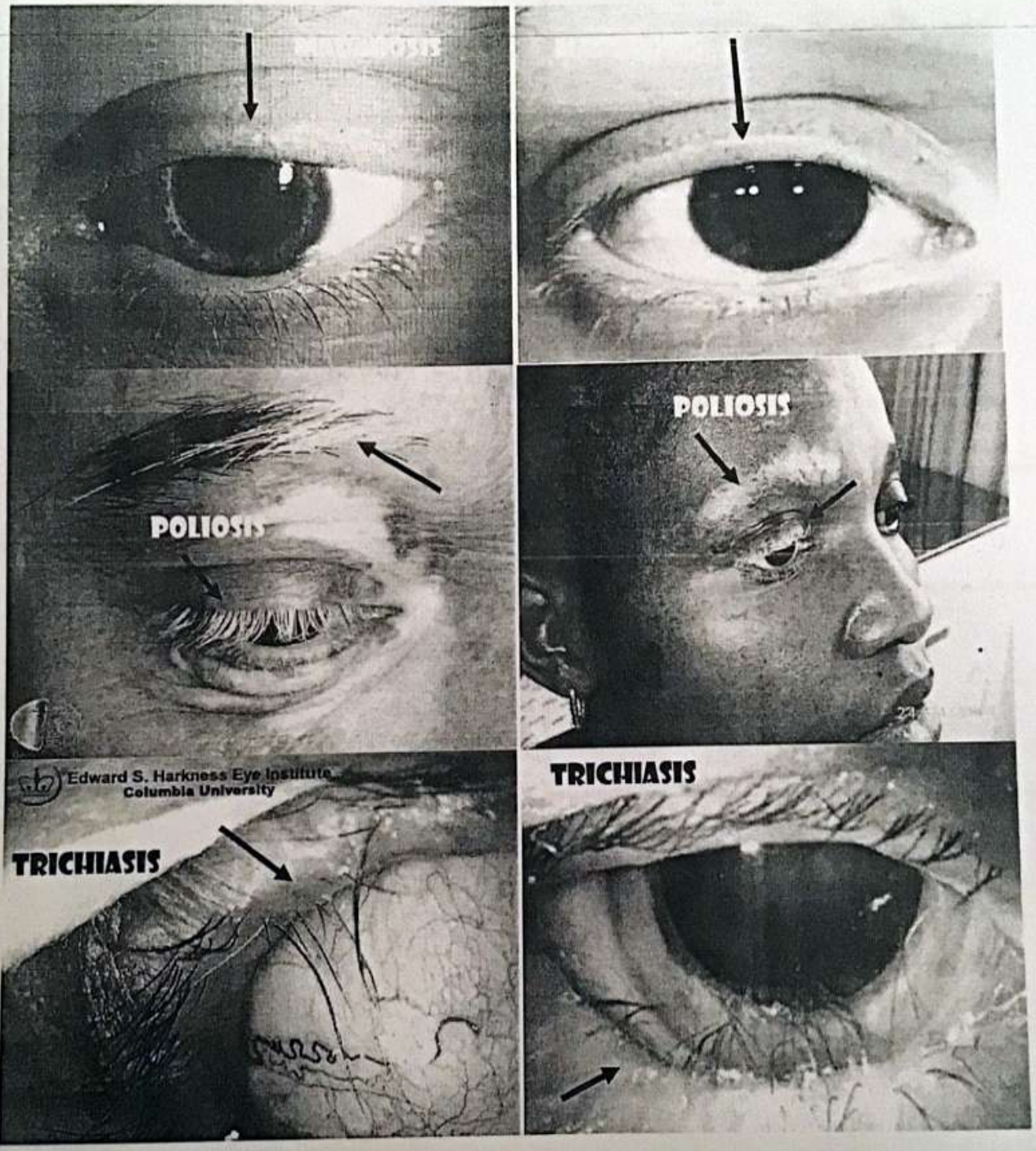
Rapidly progressive Painfull swelling **At** lid margin

❖ **Signs**

Tenderness

3- EYE LASHES

LOOK FOR Madarosis, Poliosis, Trichiasis



Trichiasis

It's the condition in which more than (4) lashes mal-directed (Backward) & rubbing against globe

❖ **Types**

1- Congenital

2- Acquired

A-Primary

(Trichiasis alone without Entropion)

Causes: - Ulcerative Blepharitis, Burn, chemical injury, Ocular cicatricial pemphegoid, Trachoma

B-Secondary

(On top of Entropion)

❖ **Symptoms**

Foreign body sensation, Photophobia, Pain, Lacrimation, Itching

❖ **Treatment**

Surgical (mainly) But if mild may use Epilation, Electrolysis, Diathermy, Cryotherapy, Laser photocoagulation

Madarosis

Partial or complete loss of eyelashes

❖ **Causes**

1- Congenital

2- Acquired

1- Post-traumatic:- chemical or thermal injury.

2- Inflammatory: - Blepharitis, HZ.

3- Radiation or chemotherapy for lid tumor.

4- Systemic diseases: - hypo – hyperthyroidism, syphilis, leprosy, SLE.

5- Skin disease: - psoriasis, alopecia areata, alopecia universalis.

6- Intoxication with arsenic, gold, Vit A.

7- Vit A deficiency.

❖ **Treatment**

Treat underlying cause + artificial eyelashes

Poliosis

White Eyelashes

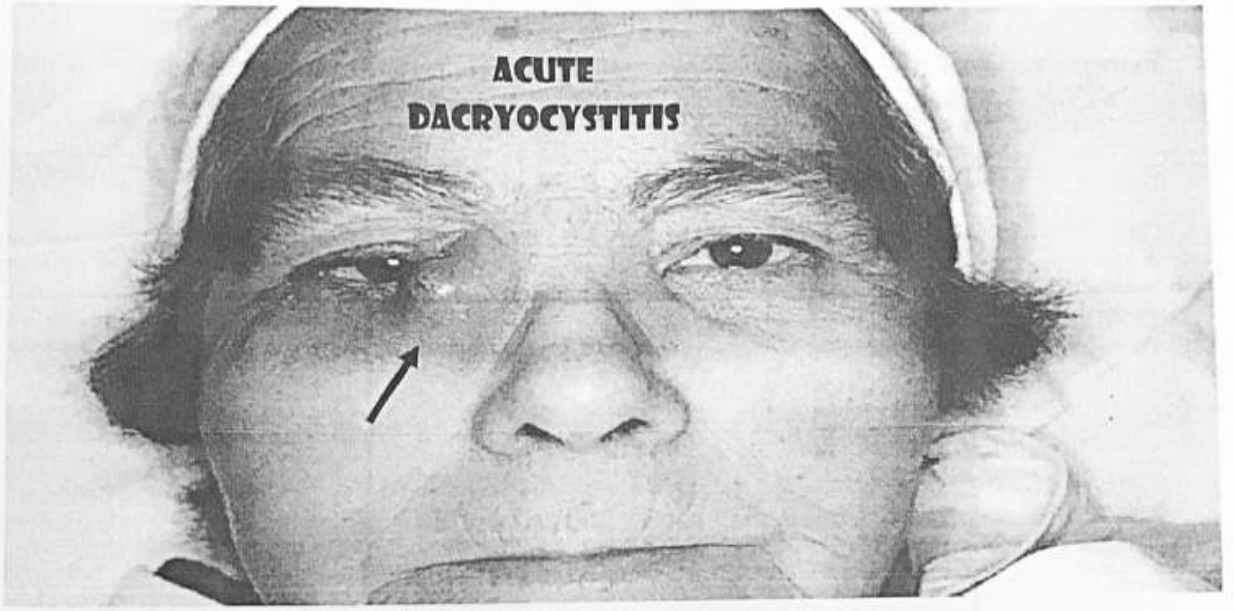
Causes:-

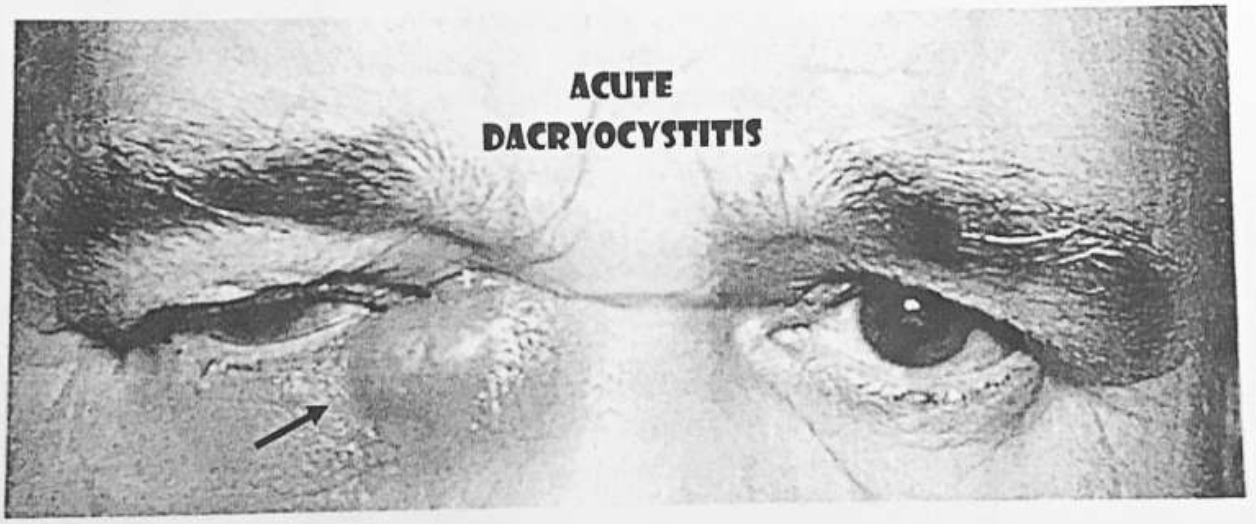
Blepharitis, Vogt-koyanagi-harada syndrome, Sympathetic Ophthalmia

4-LACRIMAL APPARATUS

- **INSPECTION: -**

LOOK FOR Swelling or redness in lacrimal area (Acute dacryocystitis)





****Acute dacryocystitis****

Acute suppurative inflammation of lacrimal sac

- **Clinical feature**

1- General examination

Fever, ***A***norexia, ***H***eadache, ***M***alaise

2- Local examination

- Painfull red swelling
- Tenderness & Hotness of skin over sac
- Regurgitation test >>> ***Negative***
- Enlargement of Submaxillary & submandibular L.N.

- **Complication**

1- Fistula formation.
2- Chronic dacryocystitis.
3- Pyocele
4- Orbital cellulitis.
5- Cavernous sinus thrombosis
6- Osteomylitis

- **Treatment**

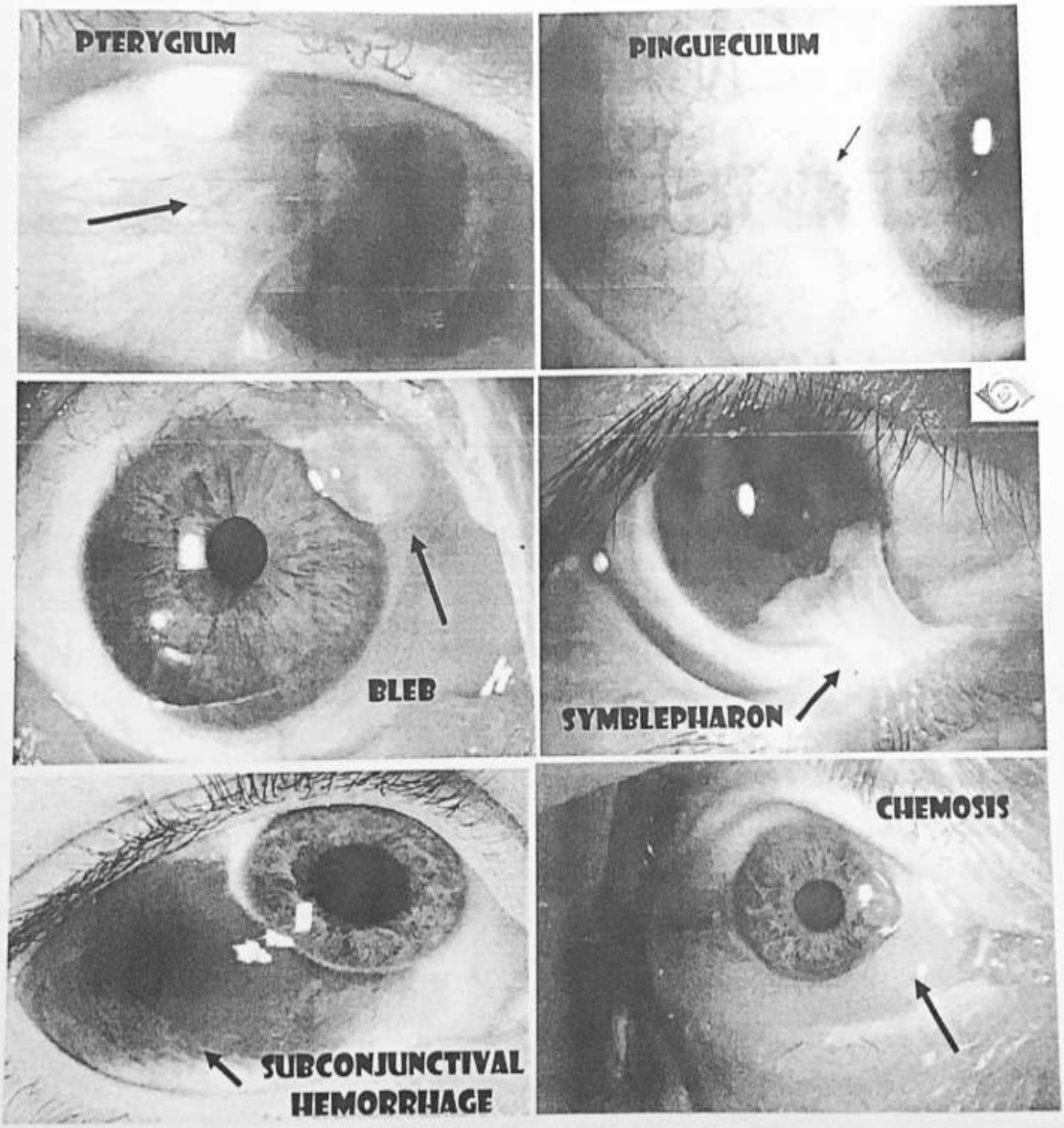
1- Medical treatment
-Analgesic, Hot compresses.
-Local & systemic antibiotic.
If abscess formed: - incision & drainage.

-Probing, irrigation & syringing (Contra-indication)

2- DCR is usually necessary ***After*** the acute infection has been controlled & should not be delayed because of the risk of recurrent infection.

5- CONJUNCTIVA

LOOK for Pterygium, Pingueculum, Bleb, Symblepharon, Subconjunctival hemorrhage, Chemosis, Red eye



Pterygium
Triangular fibrovascular tissue of conjunctiva that usually grows from the medial portion of bulbar conjunctiva toward the cornea
Usually on the Nasal side, Bilateral

❖ **Causes**

Unknown
Risk factor: - ultraviolet light, drying, and windy environments

❖ **Types**

1- Progressive: Vascular, thick & fleshy.
2- Regressive: less vascular, thin & membranous.
3- Stationary

❖ **Symptoms**

1-Decrease vision due to
A-Head of pterygium cover center of the cornea lead to diminution of vision.
B- Astigmatism

❖ **Treatment**

1-No TTT: - if small & stationary
2- Surgical excision: - if
1- Reach pupillary area
2- Progressive type
3- Cosmetically
Disadvantage of Surgical excision associated with high rate of recurrent.

To prevent recurrence the following is done
1-Cover the bare area either conjunctival autograft or amniotic membrane
2- Expose the bare area to
Beta-irradiation or mitomycin C

Lamellar keratoplasty used if cornea is affected

Symblepharon
It's adhesion of Palpebral conjunctiva to bulbar conjunctiva and or to cornea

❖ **Causes**

1- Trachoma
2- Burn, chemical injury
3-Ocular cicatricial pemphegoid
4- Recurrent pterygium operation
5- Vit A deficiency.

❖ **Treatment**

Surgical separate of adhesion with mucus membrane graft

Pingueculum
Triangular grayish yellow thickening of bulbar conjunctiva
Usually on the Nasal side, Bilateral, Elderly

❖ **Causes**

Unknown
Risk factor: - Advanced age, Exposure to sun (UV), Wind dust

❖ **Symptoms**

Asymptomatic

❖ **Treatment**

No treatment is necessary

Subconjunctival hemorrhage

❖ **Causes**

(1) Idiopathic **(2)** Trauma **(3)** Surgery **(4)** Hypertension **(5)** Blood disease **(6)** Conjunctivitis (special viral conjunctivitis) **(7)** Severe coughing or sneezing

❖ **Sign**

Bright-red homogenous appearance

❖ **Treatment**

The hemorrhage usually absorbs in 2wks.

Chemosis
Its conjunctival edema

❖ **Causes**

Trauma, Orbital cellulitis, Conjunctivitis
Thyroid eye disease

Bleb
Indicate ***Trabeculectomy*** ((***Glaucoma***))

❖ **Complications of Trabeculectomy**

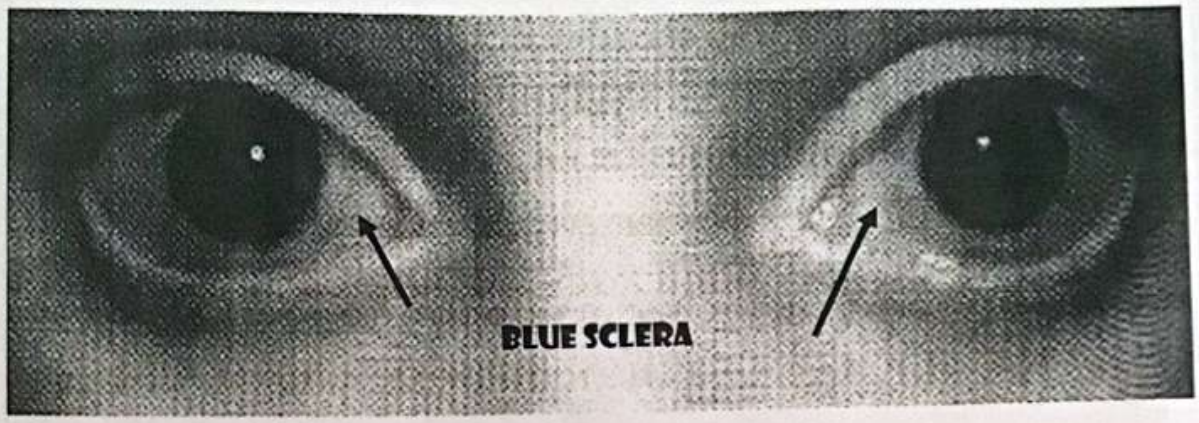
1-Intraoperative
A- Suprachoroidal hemorrhage
B-Subconjunctival hemorrhage C-Hyphema

2-Early postoperative
A-Flat AC B-Endophthalmitis
C-Suprachoroidal hemorrhage
D-Hyphema E-Cystoid macular edema

3-Late postoperative
A-Filtration failure B-Endophthalmitis
C-Cataract progression D-Refractive error
E-Visual field error

6- SCLERA

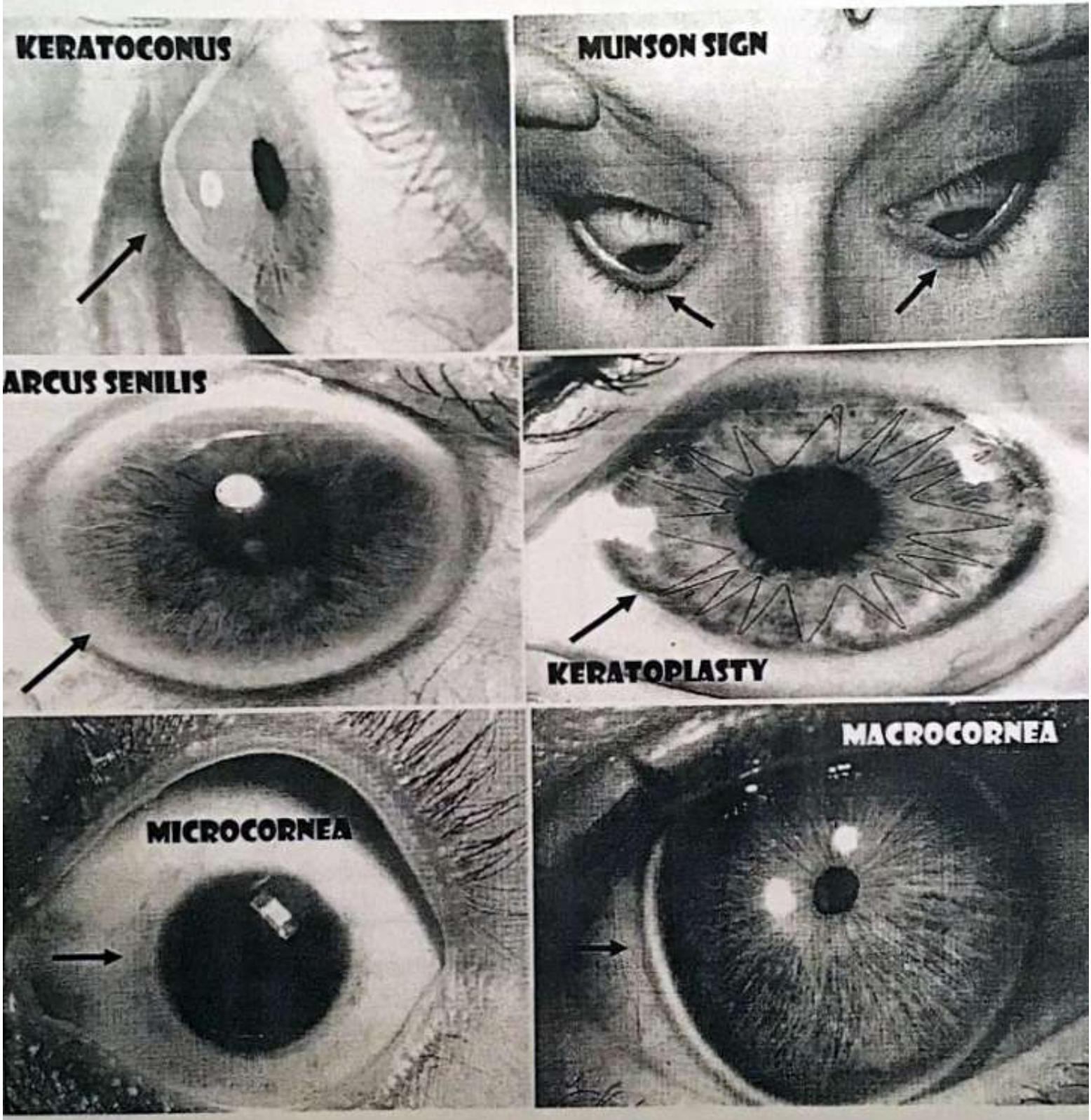
LOOK FOR Blue sclera



Blue sclera
Bluish discoloration of sclera due to uveal tissue showing through it

- **Causes**

1-Osteogenesis imperfect
2-Ehler-danlos syndrome
3-Turner syndrome
4-Marfan's syndrome
5-Scleral staphyloma
6-High myopia
7- Buphthalmos
8- Children & infant


KERATOCONUS
MUNSON SIGN
ARCUS SENILIS
KERATOPLASTY
MICROCORNEA
MACROCORNEA

Microcornea
Small cornea (corneal diameter is ≤ 10mm)

❖ **Causes**

Microphthalmos

Macrocornea
Large cornea (corneal diameter >14 mm)

❖ **Causes**

Myopia, Buphthalmos, Megalocornea

Arcus Senilis
It's a ***common***, ***bilateral***, ***benign***, ***peripheral*** corneal degeneration.
-It's strongly associated with ***age***.
There are ***No*** symptoms.
There are ***No*** complications.
There is ***No*** treatment is necessary.

Corneal opacity
A- **Nebula**
Its light corneal opacity involves Bowman's membrane and superficial layer of stroma. The finer details of iris are clearly visible through the opacity.
B- **Macula**
Its dense corneal opacity involves about half the thickness of the stroma. The fine details of the deeper structure are observed partially.
C- **Non-Adherent Leucoma**
It's very dense totally opaque corneal opacity involves almost full thickness of stroma. Nothing can be seen through the leucoma.

❖ **TTT of Corneal opacity**

1- Nebula (according to site)
Peripheral: - Hard contact lens
Central: - Lamellar keratoplasty
2- Macula ((in between))
3-Non-Adherent Leucoma **(according to site)**
Peripheral: - Hard contact lens
Central: - Penetrating keratoplasty

Keratoconus
Its NON inflammatory ectasia of cornea due to central or paracentral weakness of stroma

❖ **Causes**

-***Unknown BUT*** has been ***associated*** with a number of diseases:-
Down's syndrome, Atopic dermatitis, Marfan's syndrome, and Ehlers-Danlos syndrome, Retinitis pigmentosa, Ectopic lentis, spring catarrh, Aniridia, rigid contact lens wear & constant eye rubbing

❖ **Symptom**

Gradual loss of vision is the ***only*** symptom.
((Irregular myopic astigmatism))

❖ **Sign**

A- Early signs

1- ***Direct ophthalmoscope*** show an "***Oil droplet***" ***reflex***.
2- ***Retinoscopy*** show irregular "***Scissor***" ***reflex.***
3- ***Slit lamb*** show (***Vogt's lines***),
4- Slit lamb show Prominent corneal nerves may also be present.
5- Color-coded topography is the ***most sensitive*** method detecting very early keratoconus
6- Placido's disk: - irregular circle

B- Late signs

1-***Fleischer's ring***
2-***Munson's sign***
3- ***Acute hydrops***

❖ **Treatment**

-**Hard contact** lenses in the early stages.
-**Surgery (penetrating Keratoplasty)** is indicated when a contact lens can no longer be effectively worn

Pannus
Conjunctival or vascular ingrowth between Bowmen's layer and the corneal epithelium

❖ **Causes**

Vernal keratoconjunctivitis, trachoma, over wear of contact lens

❖ KERATOPLASTY

Types

1-Full-Thickness (**Penetrating**) keratoplasty
2-Partial-Thickness (**Lamellar**) keratoplasty

Types		Indications (MCQ +++)	
1-Penetrating keratoplasty		1- Visual (Optical) MOST COMMON INDICATION	-Corneal decompensation , keratoconus, Central corneal opacity (Leucoma), corneal dystrophy ,corneal degeneration
		2- Structural	- Descematocele, Perforated cornea
		3- Therapeutic	Use to remove of infected corneal tissue in the eye not respond to treatment (Fungal ,Viral , Acanthamoeba , Bacterial , Disk form keratitis)
		4- Cosmetic (Rare)	preformed to improve the appearance of the eye
2-Lamellar keratoplasty		1- Central corneal opacity (Nebula, macula) 2-Recurrent pterygium 3-Descemetocele 4- Keratoconus	

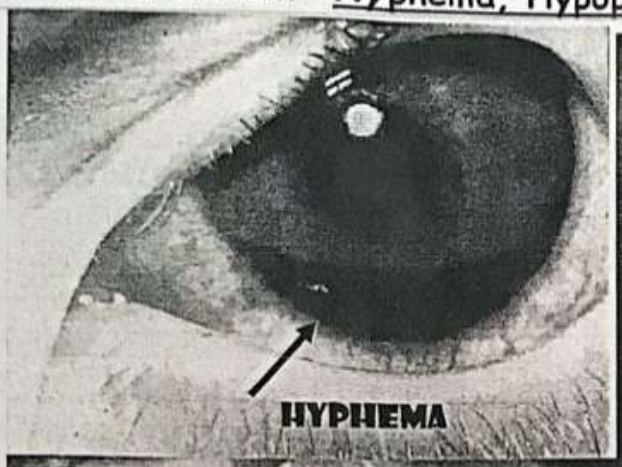
Poor prognosis of keratoplasty	
1-Xerophthalmia (Dry eye)	**2**-Corneal vascularization
3-Uncontrolled Glaucoma	**4**-Active ocular or adenxal infection

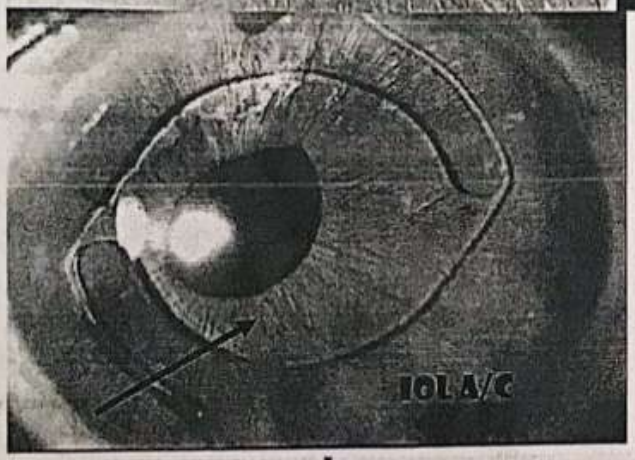
Properties donor cornea
1-Should be preferable adult cornea (20 -50) not from **infant(Small diameter and friable Corneas are difficult to handle)** & not from **elderly (due to low endothelium cell count)**
2-The donor should free from **(Syphilis ,AIDs ,Viral hepatitis ,Septicemia, rabies, CMV encephalitis, Congenital rubella, Malignancies)**
3-The donor should free from intrinsic eye disease **(e.g. intra-ocular tumor, active inflammation or previous intra-ocular surgery)**
4- Duration of death **>6** hours

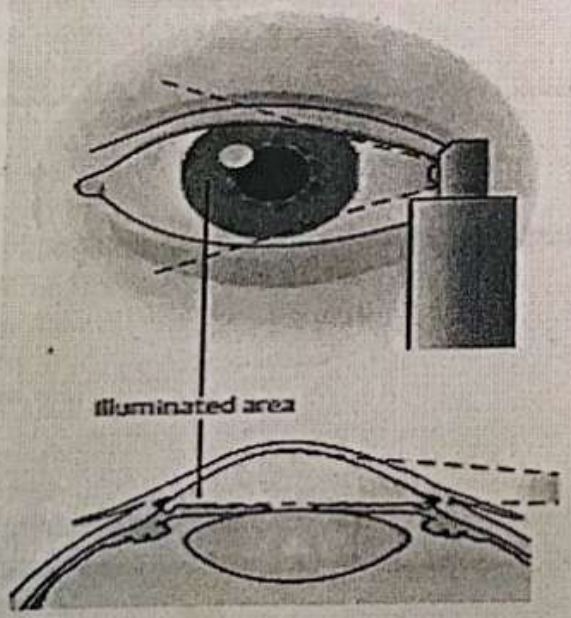
8- A/C

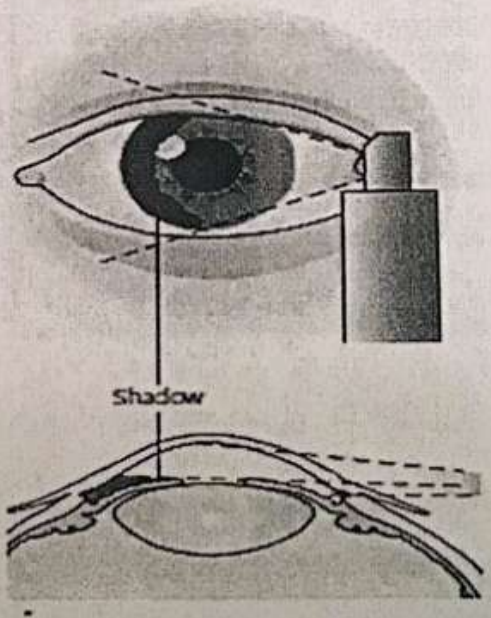
LOOK FOR Depth (Normal, Deep, Shallow)

Abnormal content = Hyphema, Hypopyon, IOL A/C, Ahmed valve









How to determined depth of A/C?
1- Shine a light from the temporal side
2- Look at the nasal aspect of iris
***If 2/3 or more of nasal iris is shadow = **shallow chamber**
***If entire of nasal iris lighting = **Deep chamber**

❖ **D.D OF SHLLOW A/C**
Anterior synechiae, Hypermetropia, Closed angle glaucoma

❖ **D.D OF DEEP A/C**
Myopia, Aphakia, Buphthalmos, Keratoconus, Keratoglobus

❖ **D.D IRREGULAR DEPTH OF A/C**
Posterior synechiae, leucoma adherent, post operative

Hypopyon= *(Pus in Anterior chamber)*

❖ ***Causes of hypopyon***
Lens reaction (intraocular lens or retained lens proteins), Keratitis (bacterial, fungal, or Viral), endophthalmitis, iritis (any severe hyperacute uveitis, Especially Behçet's Or ankylosing spondylitis),
Tumor (pseudohypopyon from intraocular tumor necrosis can be seen with RB, leukemia).

Aphakia
Complete absence of lens from pupillary area

❖ **Causes**
1- Congenital
2- Acquired: - trauma, surgical remove

❖ **Signs**
Scar of surgery
AC: - Deep
Iris: - Iridodenesis
Pupil: - Jet black
One purkinje image

❖ **Treatment**
Unilateral: - Contact lens, IOL.
Bilateral: - Contact lens, IOL, Glasses.

Hyphema= *(Blood in Anterior chamber)*

❖ ***Causes of hyphema***
1-Trauma (Blunt, Penetrating) ***(Most common cause)***
2-Intraocular surgery
3-Spontaneous: -
A- Neovascularization of iris
B- Blood disease (Leukemia, hemophilia)
C- Drug (Aspirin, Warfarin, NSAID)

❖ ***Complication of hyphema***
1- Secondary glaucoma (Open OR Close)
2- Blood stained cornea (**5%**) (Need increase of IOP).
3- Decrease vision (due to cross pupil).
4-Recurrent hyphema (**20%**)(Secondary hyphema) within 3-5 days, more common in Black people

❖ ***Treatment of hyphema***
1-Bed rest (Hyphema will resolve spontaneously).
2-Patient should sitting in upright posture to allow blood to settle (This will restore vision).
3-We should monitoring IOP (Glaucoma!!), we can give anti-glaucoma drug.
4-We can give prophylactic topical steroid, antibiotic, Mydriatic & in sever case need Surgical intervention ((paracentesis))
5-Antifibrinolytic agent (Aminocaproic acid) is used to reduce chance of recurrent hemorrhage.
6-**Aspirin, NSAID, Mitotic must be avoided**.

IOL A/C

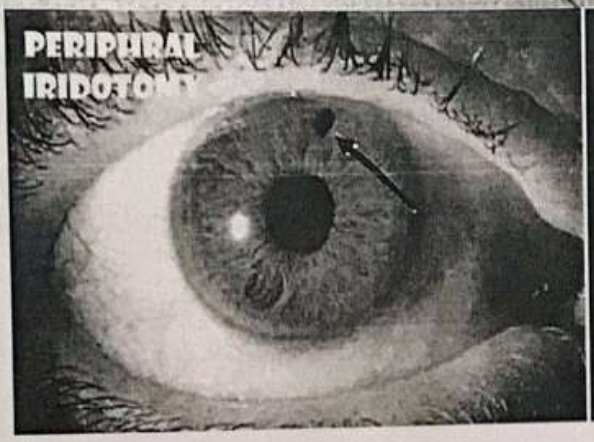
❖ ***Complication of IOL A/C***
1- Hyphema.
2- Uveitis.
3- Glaucoma.
4- Displacement.
5- Corneal edema.

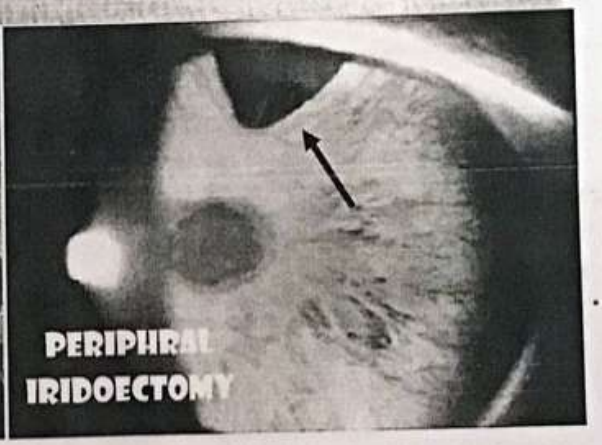
BLUNT TRAUMA

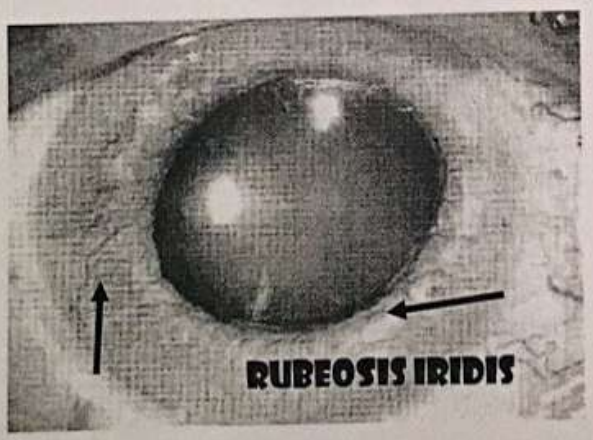
Part	❖ Complication
Lid	1- Lid wounds 2-Lid edema 3- Black eye (subcutaneous hemorrhage) 4-Subcutenous emphysema (air under skin) 5-Ptosis (mechanical & paralytic)
Lacrimal	Injury of lacrimal drainage system
Conjunctiva	1- wounds 2-Edema (chemosis) 3-conjunctivitis 4- subconjunctival hemorrhage
Sclera	1- Wounds 2-Scleritis 3-Scleral rupture
Cornea	1- Corneal abrasion 2-Corneal ulcer 3-Corneal edema 4-Corneal rupture 5-Blood stained cornea
A/C	❖ **1-Irregularity of depth** 1- **Shallow** A/C ⇒ Corneal rupture 2-**Deep** A/C ⇒ Posterior dislocation 3-**Irregular** A/C ⇒ Subluxation ❖ **2-Abnormal content** 1-Hyphema 2-Plasmoid aqueous 3-Anterior dislocation ❖ **3- Rupture of trabecular meshwork lead to fibrosis >>> 2ry glaucoma (angle recession glaucoma)**
Iris	1-Wound 2- Miosis or Mydriasis (according to damage muscle) 3-Iridocyclitis ⇒ 2ry glaucoma 4-Iridodenesis 5-**Iridodialysis** 6-Aniridia 7- Iris atrophy 8-Iritis
Lens	1-Vossius ring 2- Rosette shape cataract **or** subcapsular cataract 3-Lens displacement (subluxation , dislocation)
Ciliary body	1-Cyclitis 2-Tear of ciliary body 3-Spasm of ciliary muscle ⇒ myopia followed by loss of accommodation 4- Ciliary shut down (Hypotony) 5-Cyclodialysis
Vitreous	1- Vitreous detachment 2- Vitreous hemorrhage 3-Vitreous floaters 4- Liquefaction
Choroid	1-Choroid detachment 2-Choroid hemorrhage 3-Choroiditis 4-Choroid rupture (choroid crescent)
Retina	1-Retinal tear, hole 2-Retinal detachment 3-Retinal hemorrhage 4-**Commutio retina** (Berlin's edema) :-Involve macula, appear as white milky area with cherry red spot, it may resolve spontaneously (few days), or cause macular degeneration ,macular tear & hole ⇒ loss of central vision 5-Retinitis 6-Retinal necrosis 7- Retinal atrophy
Optic nerve	1-Papillitis 2-Hemorrhage &edema 3-Optic nerve atrophy 4-Damage to blood supply or some nerve fiber ⇒ loss of visual field
Extraocular muscle	Damage to muscle lead to limitation of movement ⇒ Diplopia Damage to cranial nerve lead to limitation of movement ⇒ Diplopia
Orbit	1-Traumatic proptosis 2- Fracture of orbital floor **(Blow-out Fracture)**

9- IRIS

LOOK FOR Color changes (Heterochromia), Procedure (Iridotomy, Iridoectomy), Iridodenesis, Iridodialysis, Rubeosis iridis,







Heterochromia

❖ **Causes**

1- Hypochromia

1- Congenital
2- Horner's syndrome
3- Fuch's heterochromic Cyclitic

2- Hyperchromia

1-Unilateral use of topical latanoprost
2- Iris naevus or melanoma
3-Sturge-weber syndrome
4-Ocular siderosis
5- Oculodermal melanocytosis (naevus of Ota)

Iridodonesis

Excessive iris movement

❖ **Causes**

1- Aphakia
2- Subluxation
3- Myopia

**** Neovascularization in the Iris****
(Rubeosis Iridis)

❖ **Causes**

As result of ***retinal ischemia*** which may have one of the following causes

1- Ischaemic CRVO
2- Proliferative diabetic retinopathy (PDR)
3- Carotid obstructive disease
4- Intraocular tumours
5- Chronic intraocular inflammation
6- Retinopathy of prematurity.
7- CRAO

❖ **Complication**

1- Hyphema
2- Neovascular glaucoma

❖ **Treatment**

Panretinal argon laser photocoagulation (PRP)

Peripheral iridotomy

Used to create an opening in the peripheral Iris (iridotomy) by tissue Lysis without having to open the globe (done by YAG or Argon laser)

❖ **Indication**

1- Pupillary block glaucoma
2- Closed angle glaucoma
3- Fellow eye in patients of acute angle Closure glaucoma

❖ **Contraindication**

1-Inability of the patient to sit at slit-lamp
2-Very shallow A/C
3-Very dense corneal opacity or hazy cornea

❖ **Complication**

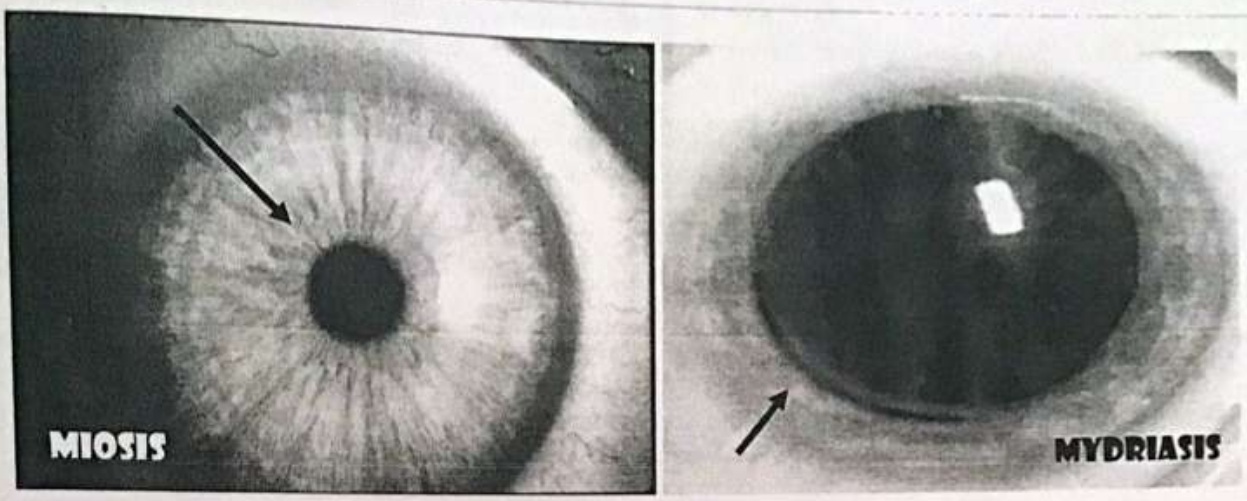
1- Hemorrhage
2- Uveitis
3- Corneal burn
4- Lens opacity
5- Macular burn

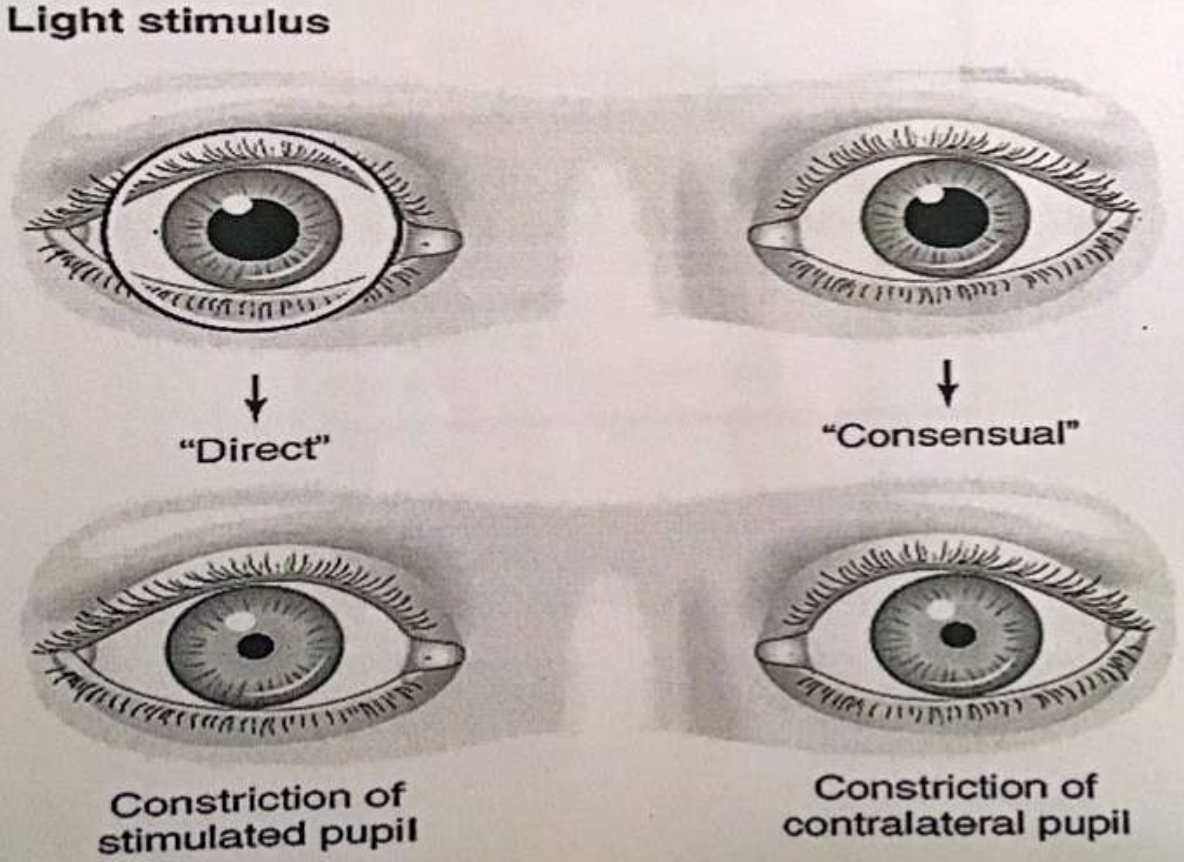
Peripheral iridectomy

Today peripheral iridectomy is rarely performed (in only 1–2% of cases)
Used where the cornea is not clear or the iris is very thick

10- PUPIL

CRRR (Central, Round, Regular, React), Light reflex (Direct, Indirect)
Size (Miosis, Mydriasis, Anisocoria)





Miosis

❖ **Causes**

1- Near vision
2- During sleep
3- Local Pilocarpine
4- General anesthesia **(stage III)**
5- Morphine poison
6- Hypermetropia
7- Iridocyclitis
8- Surgery, blunt trauma
9- Argyll Robertson pupil
10- Horner s syndrome
11- Pontine hemorrhage

Mydriasis

❖ **Causes**

1- The dark
2- Excitement, fear, pain
3- Local phenylepherine, atropine
4- Myopias
5- General anesthesia **stage I, II, IV.**
6- Acute congestive glaucoma
7- Blunt trauma
8- Optic nerve atrophy
9- Ciliary ganglion inflammation
10- Surgical 3rd cranial nerve palsy
11- Adie s syndrome

Anisocoria

Unequal size pupils between two eyes

❖ **Causes**

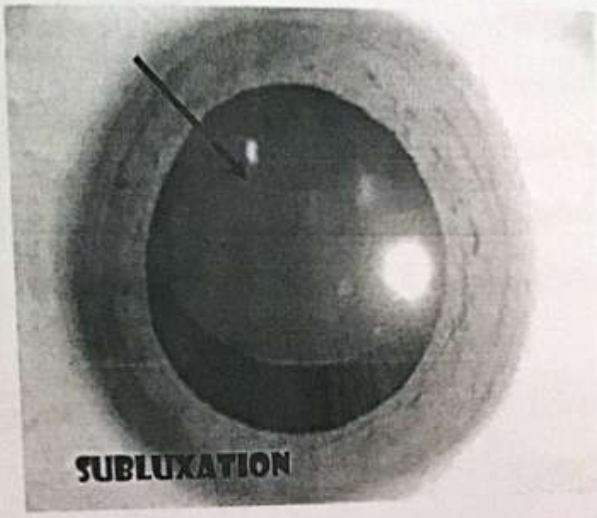
1-Drugs (If used for one eye)
2-Inflammation (Iridocyclitis)
3- Angle- closure glaucoma
4-Unilateral Iris diseases {atrophy, Aniridia}.
5- Trauma (Paralysis of dilator papillae, Constricted pupillae)
6-Horner s syndrome
7-Adie s syndrome
8-Surgical 3rd cranial nerve palsy

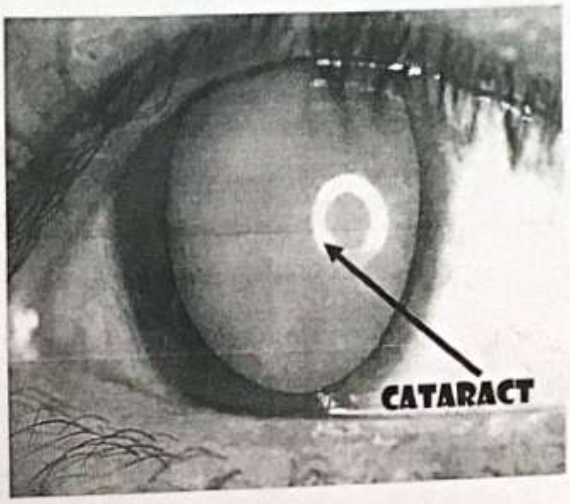
11- LENS

Position (normal, partial or complete dislocation)

Opacity (Mature, Immature cataract)

Aphakia, Pseudophakia





HOW TO DIFFERENTIATE BETWEEN IMMATURE AND MATURE CATARACT?

	Stage	Immature	Mature
Symptoms	Vision	Decrease of vision (counter –finger)	Decrease of vision (Hand Movement)
Signs	A/C	Normal	Normal
	Iris shadow	Present	Absence
	Iris tremulous	Absence	Absence
	Color of lens	Grayish	White
	Red reflex	Present	Absent
	Fundoscopy	Present	Absent
	Complication	None	None

❖ ***Indication (TIME) of cataract surgery***

1- ***Visual improvement (Most common indication)***
-If cataract cause difficult to performing daily essential activity.
-If patient job need good vision like driver.

2- ***Medical indications***
-when cataract affecting health of eye e.g. Glaucoma phacomorphic, glaucoma phacolytic **(Lens induce glaucoma)**
-to improve the clarity of ocular media may also be required in the context of fundal pathology (e.g. diabetic retinopathy) requiring monitoring or treatment with laser photocoagulation.

3- ***Cosmetic***
Are rare, such as when as mature cataract in blind eye is removed to restore black pupil

❖ TYPES OF SURGERY

Surgery	*Intra Capsular Cataract Extraction ((ICCE))*	*Extra Capsular Cataract Extraction ((ECCE))*	*Phacomulsification ((PHACO))*
Principle	Complete removal of lens within its capsule	Opening the anterior capsule, remove nucleus and cortex, leaving part of anterior capsule and whole posterior capsule.	This technique consist of breaking down of cataractous lens by application of ultrasonic vibration
Advantage	1-No after cataract	1-Low degree astigmatism 2- Low risk of A-Vitreous loss B-Retinal detachment C-Macular edema 3- Posterior chamber IOL is possible	1-Very small incision(3mm) 2- Less tissue injury 3- Faster healing 4-More rapid visual rehabilitation 5- Minimum or No astigmatism 6-Less expulsive hemorrhage 7-Less corneal endothelium damage
Disadvantage	1-High degree astigmatism 2- High risk of A-Vitreous loss B-Retinal detachment C-Macular edema 3- Anterior chamber IOL	1- After cataract	1- Machine dependent 2-Expensive technique 3-Longer learning period 4-Complication are common while learning 5- After cataract

❖ Complication of cataract extraction

Intra-operative Complication	1-Hyphema 2-Expulsive hemorrhage 3-Corneal injury
	4-Iris prolapse , Iridodialysis 5-Rupture of Posterior capsule ⟹ vitreous loss **Vitreous loss lead to (post-operative)** 1- Excessive astigmatism 2- Bullous keratopathy 3- Drawn up pupil 4- Glaucoma 5- Cystoid macular edema 6- Retinal detachment 7- Expulsive hemorrhage
Early post operative complication	1-Corneal edema 2-Wound leakage (shallow anterior chamber) 3-Iris prolapse 4-Iridocyclitis (Anterior uveitis) 5-Infection: - ((Acute post-operative endophthalmitis)) 6-Increase of IOP (Glaucoma) 7- Wrong IOL power
Late post operative complication	1-Corneal decompensation 2-Aphakic glaucoma 3-After cataract(**ECCE & PHACO**) 4-IOL displacement 5-Post-operative astigmatism 6-Cystoids macular edema((**CME**))((**Irvine-Gass syndrome**))

Examination case of SQUINT

1) Corneal light reflex (Hirschberg test)

Put the torch infront both eyes at 50cm & ask the patient to fix on torch & observe reflex of light on surface of cornea of both eyes

*If both light reflex are on the centre of both corneas so there is NO SQUINT

* If light reflex of one cornea is central while the light reflex of other cornea is NOT central so there is SQUINT

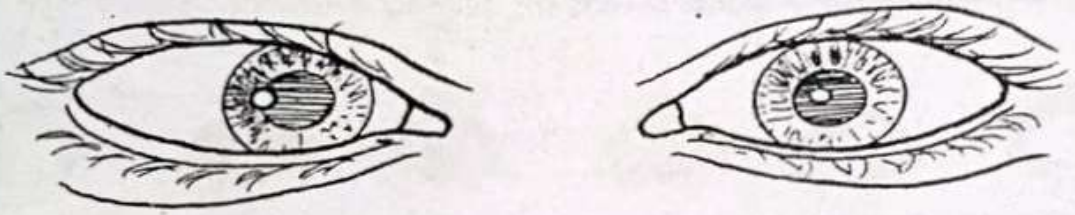
IF eye deviate IN =Convergent IF eye deviate OUT= Divergent

Corneal light reflex help us to know ANGLE OF SQUINT

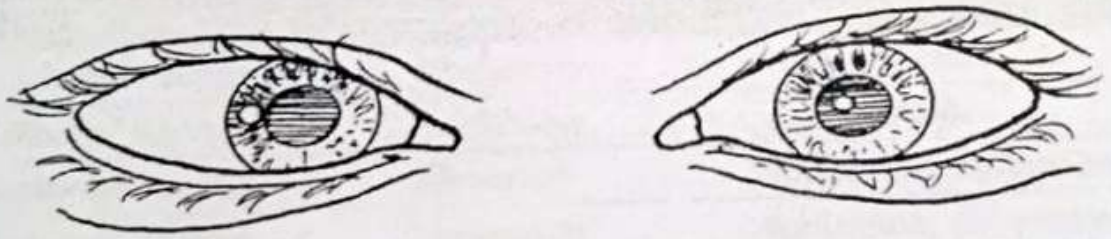
IF at Pupil margin = 15°

IF between pupil margin & limbus =30°

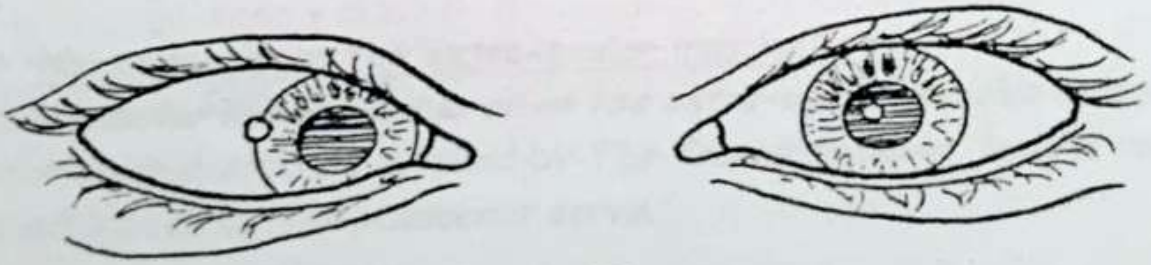
IF at limbus =45°



1- Corneal light reflex at pupilary margin = 15 Degree



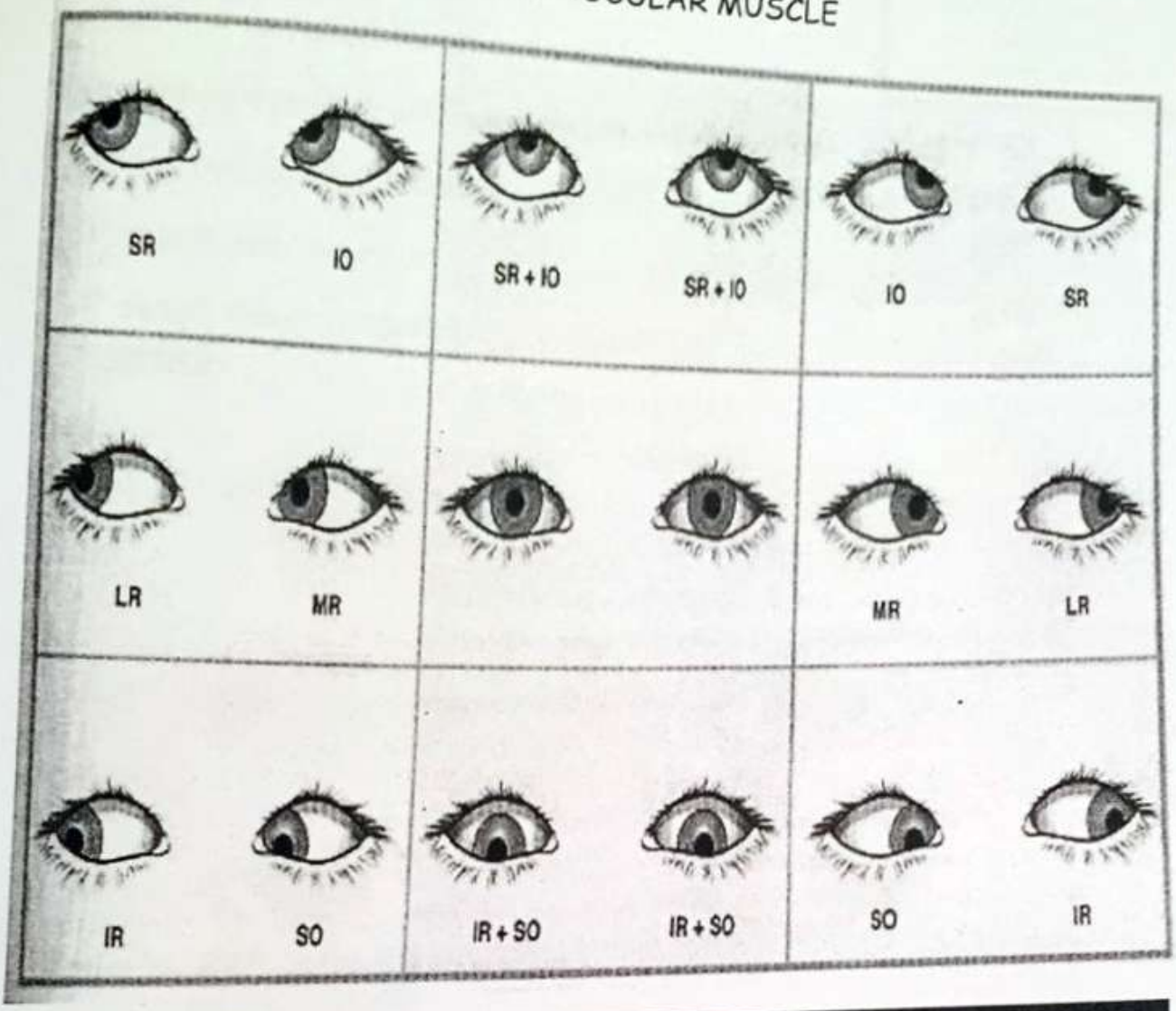
3- Corneal light reflex between pupilary margin & limbus = 30 Dgree



2- Corneal light reflex at limbus = 45 Degree

2) Ocular motility

To detect any paralysis of EXTRAOCULAR MUSCLE



Muscle	Primary action	Secondary actions
Lateral rectus	Abduction	None
Medial rectus	Adduction	None
Superior rectus	Elevation	Adduction, Intorsion
Inferior rectus	Depression	Adduction, Extorsion
Superior oblique	Intorsion	Depression, Abduction
Inferior oblique	Extorsion	Elevation, Abduction

❖ Nerve supply to the extra-ocular muscles:

The Oculomotor nerve supplies all of the extra-ocular muscles except superior oblique, which is supplied by *The Trochlear nerve*, *lateral rectus* which is supplied by *The Abducent nerve*.

3) Cover-Uncover test

Is squinting eye NOT take fixation. What are causes?

1- Pseudosquint
2- Paralytic squint
3- Very poor vision
4- Eccentric fixation

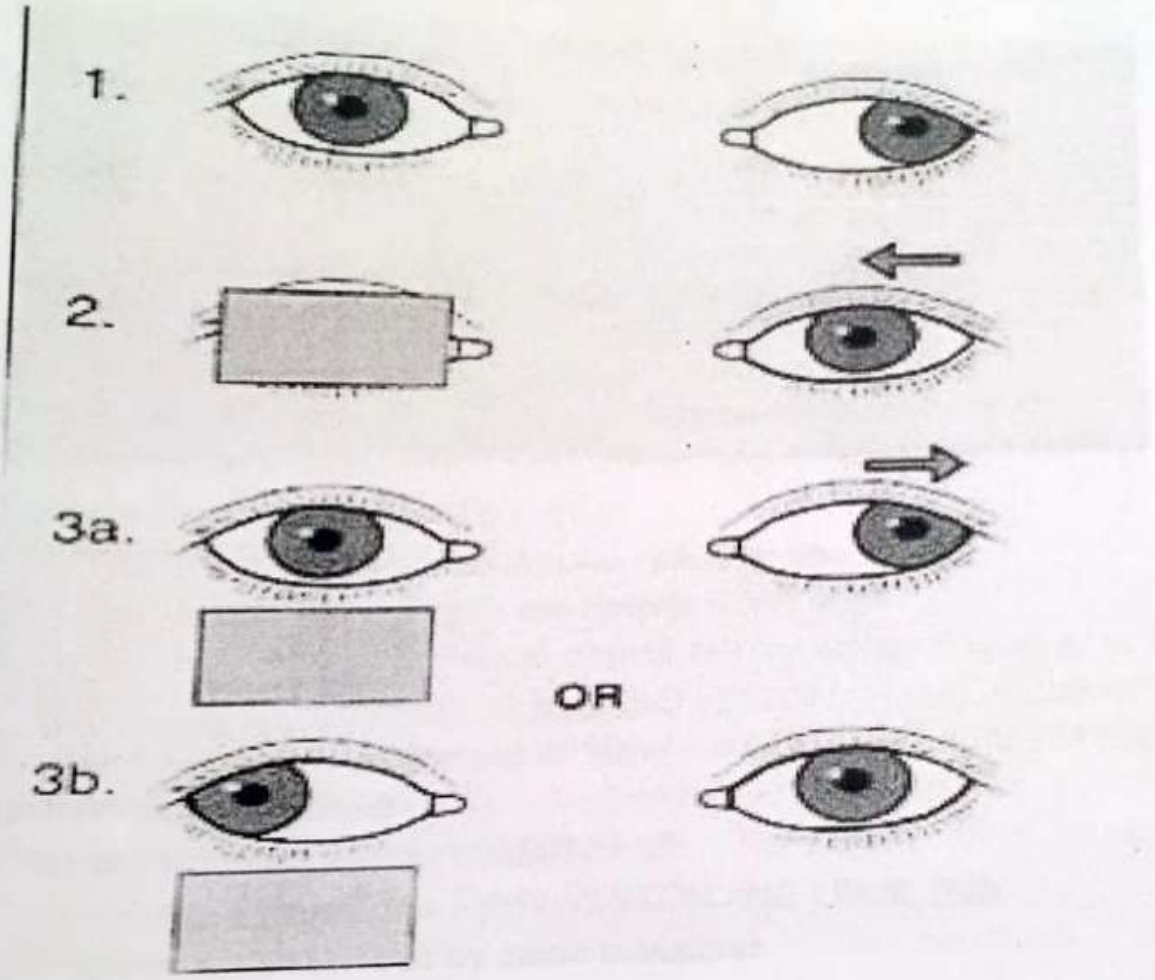
Put the torch infront of patient (50cm)

Ask patient to fix on torch

Cover fixing eye (eye with central CRL) so the other squinting eye will fix, Remove cover and ***observe***

IF squint eye return to original position SO squint ***unilateral*

IF squint eye maintained in fixation (NEW POSITION) SO squint ***alternating*



❖ ***USES OF COVER UNCOVER TESTS***

1- Diagnosis of apparent squint >>>> NO MOVEMENT

2-Diagnosis of latent squint >>>>>eye move under cover will deviate & after removal of cover will return

3-Diagnosis of paralytic squint>>>> 2ry Angle>1ry angle

4-Differentiation between UNILATERL AND ALTERNATING SQUINT

❖ OTHER TESTS

1- VISUAL ACUITY

Ask the patient to cover one eye & ask him to see (SNELLEN'S CHART)

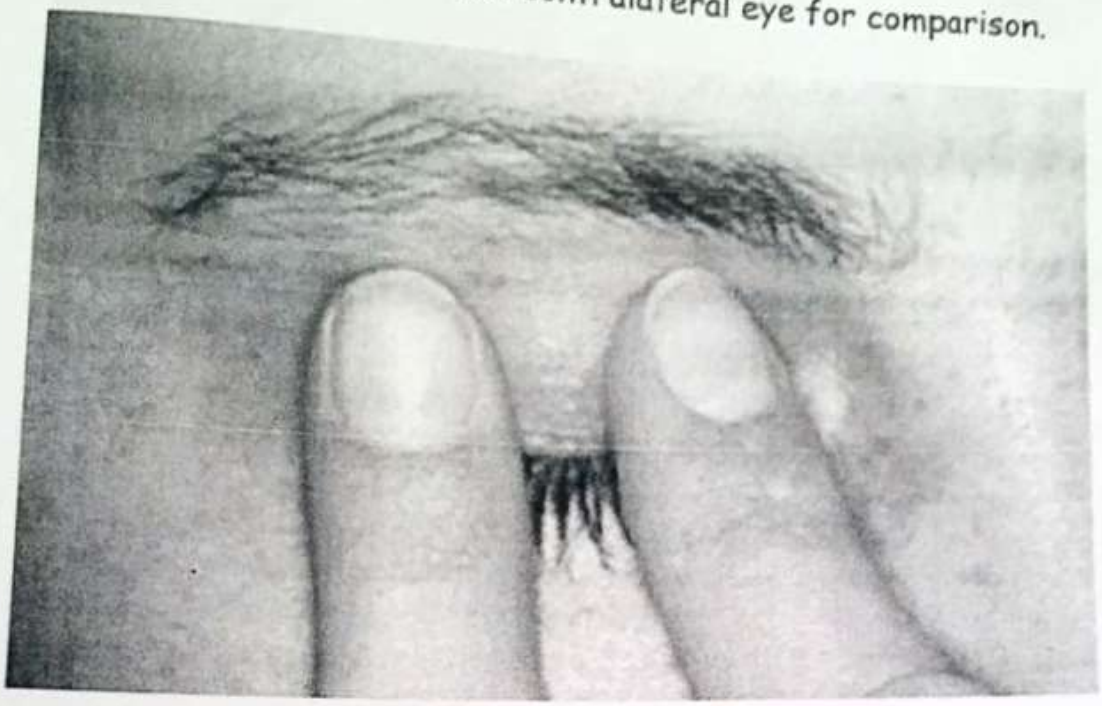
If the patient cannot see BIG Letter
USE COUNT FINGER AT 6m ,5m,4m, 3m, 2m, 1m
IF patient cannot count finger use HAND MOVEMENT
Move your hand infront him & ask him to tell you either moving or not
IF patient can see movement of hand SO VISION= HAND MOVEMENT
IF patient cannot see movement of hand >>>> DO LIGHT PERCEPTION
Put torch infront patient
IF the patient see light>>>>>VISION = LP
IF the patient does not see light= VISION =NO LP= BLIND
THEN examine another eye by same maneuver

2- LIGHT PROJECTION

1- Ask patient to cover one eye & look forward by other eye
2-Ask the patient to point at direction of light in different direction of light in different direction
IF the patient know all direction
LIGHT PROJECTION=GOOD
IF the patient make mistake even in one direction
LIGHT PROJECTION= BAD

3- DIGITAL TONOMETRY (Rough test)

1- Ask the patient to look downwards ***without*** closing eye
2- Press on the globe by index finger at upper outer quadrant
3- By the other index indent the globe gentaly at the upper nasal quadrant
The test is repeated on the contralateral eye for comparison.



4- CONFRANTATION TEST

Confrontation testing provides gross screening of the field of vision where perimetry tests are not available; the patient faces the examiner at a standard distance of ***1m*** with his or her eyes at the ***same level*** as the examiners. ***Both focus on the other's opposite eye*** (i.e., the patient's left eye focuses on the examiner's right eye) while ***covering their contralateral eye with the palm of the hand***. ***The examiner moves an object such as a pen, cotton swab, or finger from the periphery toward the midline in all four quadrants*** (in the superior and inferior nasal fields and superior and inferior temporal fields). A patient with a *normal field of vision* will see the object at the same time as the examiner; a patient with an *abnormal or restricted field of vision* will see the object later than the examiner. Confrontation testing is a gross method of assessing the field of vision.

5- Ocular motility

6- A/C Depth

7- Corneal Light Reflex

8- Cover uncover test

لاتنسونا من صالح الدعاء